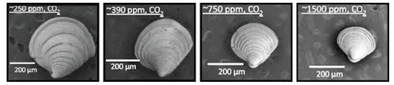
Concerns about the impacts of climate change on shellfish aquaculture have spurred action in Massachusetts

Massachusetts' economy and coastal environment depend on abundant and healthy shellfish. Coastal acidification threatens the livelihood of more than 5,700 people and nearly $700,000 in state product. Urgent action is needed to limit discharges from land based sources that are contributing to acidification.



Clam shell growth and thickness are affected by acidification caused by CO_2 emissions.

In less than 10 years, reports from shellfishers and shellfish farmers (aquaculture) have increased statewide attention to the issue.

In December 2018, the state legislature formed a special commission to investigate the Commonwealth's preparedness for coastal and ocean acidification and its impacts on commercially harvested species.

In February 2021, the commission published a report including nine recommendations, including a call for support to existing estuarine monitoring and new monitoring where needed.

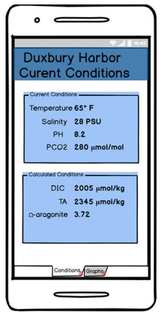
Oyster aquaculture in Wellfleet, MA *Photo: MA Department of Agricultural Resources*

Duxbury Bay is home to 28 shellfish farms and produces 9.6 million oysters annually over an area of 77 acres. The combined value of oysters, surf clams, and quahogs amounts to $6 million annually.

Location of sensor in Duxbury Bay. You can also see some of the oyster farms. (Google Map).

New data will help researchers understand the degree of stress that oysters and other shellfish experience in acidic waters.

With our continuous data (24h/7d) we can develop models to predict low acidity events **up to 3 days in advance**, giving growers ample time to take actions to protect their crop.



Why it Matters

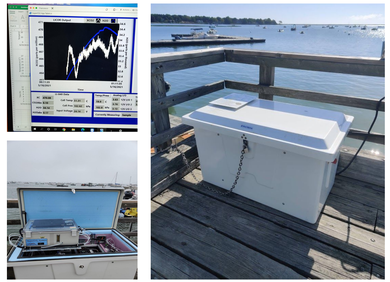
There is so much to lose!

- In Massachusetts there are 391 growers, and 30 coastal communities that depend on this industry for their livelihood.
- > $10 million annual revenue (2018)
- The future of oysters requires action on many levels.

Modern technology allows the changes in acidity of coastal waters to be measured rapidly, accurately, and in real time

With funding from U.S. EPA, MassBays and UMass Boston have designed a coastal acidification measuring system that can collect data continuously. It can be deployed year-round and provide data 24 hours a day, 7 days a week, even when it is icy, stormy, or the tides are at their highest and lowest. The system is temperature-controlled and compact, and we've posted information about the project on the unit for passers-by.

The first system was deployed on the town pier in Duxbury Bay on May 19, 2021.



COAS sensors and data output, Duxbury Bay. (Photos: S. Davis)

What You Can Do

- Join our team of volunteers for a bi-weekly check on the sensors on Duxbury town pier. And while there, feel free to tell visitors what you've learned about what is in "that white box"!
- Roll up your sleeves to collect water samples from the dock, and if you have a boat, consider dedicating 1 hour each month to sample in the Bay.

Connect with the North & South Rivers Watershed Association to join the effort.

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Take a picture to see the commission's report